Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Wireless E911 Location Accuracy Requirements	)	PS Docket No. 07-114
	)	
Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems	)	CC Docket No. 94-102
	)	
Association of Public-Safety Communications Officials-International, Inc. Request for Declaratory Ruling	)	
	)	
911 Requirements for IP-Enabled Service Providers	)	WC Docket No. 05-196

COMMENTS

Clearwire Corporation, on behalf of itself and its license-holding and service-providing subsidiaries (collectively "Clearwire"), hereby files these Comments in the Federal Communications Commission's ("Commission") above-referenced proceeding seeking comment on issues relating to wireless Enhanced 911 (E911) location accuracy and reliability requirements. Particularly, Clearwire addresses the Commission's tentative conclusion that portable or mobile interconnected Voice over Internet Protocol (VoIP) service providers must employ an automatic location technology that meets the same accuracy standards that apply to services offered by circuit-switched commercial mobile radio services (CMRS) providers.[1]

While Clearwire supports the Commission's goals to enhance the reliability and accuracy of E911 services generally, and to ensure that VoIP services that are used as substitutes for

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[1] *See Wireless E911 Location Accuracy Requirements, Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, Association of Public-Safety Communications Officials-International, Inc. Request for Declaratory Ruling, 911 Requirements for IP-Enabled Service Providers,* PS Docket No 07-114, CC Docket No. 94-105, WC Docket No. 05-196, Notice of Proposed Rulemaking (rel. June 1, 2007) (" *E911 NPRM*") at para. 1.

traditional telephony and CMRS are similarly reliable for emergency response capability,[2] Clearwire submits that automatic location capabilities for portable VoIP services do not yet exist in spite of industry efforts to attempt to develop them over the past couple of years. Consequently, Clearwire urges the Commission to defer enforcement of any accuracy rules to VoIP providers and refrain from mandating any automatic location capability and/or particular location accuracy technology standard for all VoIP service providers until all key industry participants—broadband network providers, VoIP service providers, public safety entities and their representatives, equipment vendors and others involved in developing and/or providing portions of the evolving E911 infrastructure—have had sufficient time to work together to develop a technically feasible solution that best advances the Commission's goals. To that end, Clearwire understands that advances in location-based technologies, such as hybrid technologies employing both handset and network-based solutions, are being evaluated but are not yet commercially available. These hybrid technologies are likely better able to overcome the identified shortcomings of a stand-alone handset-based (GPS) or network-based (triangulation)

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[2] *See e.g., IP-Enabled Services, E911 Requirements for IP-Enabled Service Providers*, WC Docket Nos. 04-36, 05-196, First Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 10245 (2005), *aff'd, Nuvio Corp. v. FCC*, 473 F.3d 302 (D.C. Cir. 2006) (*E911 First Report and Order*) at 10256-57 (stating that "consumers expect that VoIP services . . . interconnected with the PSTN function in some ways like a 'regular telephone' service and the ability to dial 911 to provide emergency access is a reasonable expectation"). Moreover, in the *E911 Scope Order*, the Commission set forth four criteria, among others, for determining whether particular entities should be subject to E911 regulation:

> (1) the entity offers real-time, two-way switched voice service, interconnected with the public switched network, either on a stand-alone basis or packaged with other telecommunications services; (2) customers using the service or device have a reasonable expectation of access to 911 and E911 services; (3) the service competes with traditional CMRS or wireline local exchange service; and (4) it is technically and operationally feasible for the service or device to support E911.

Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems; Amendment of Parts 2 and 25 to Implement the Global Mobile Personal Communications by Satellite (GMPCS) Memorandum of Understanding and Arrangements; Petition of the National Telecommunications and Information Administration to Amend Part 25 of the Commission's Rules to Establish Emissions Limits for Mobile and Portable Earth Stations Operating in the 1610-1660.5 MHz Band, CC Docket No. 94-102, IB Docket No. 99-67, Report and Order and Second Further Notice of Proposed Rulemaking, 18 FCC Rcd 25340 (2003) at 25347.

solution.[3] The fact that such hybrid solutions are not yet commercially available should play an important role in both the Commission's analysis and adoption of VoIP automatic location capability compliance deadlines.

I. INTRODUCTION

Clearwire constructs and operates next generation portable wireless broadband networks and services that provide consumers an always-on broadband connection anytime and anywhere within Clearwire's wireless network coverage area. Clearwire's non-line-of-sight wireless broadband solution connects customers to the Internet using Commission-licensed spectrum in the 2.5 GHz frequency band via radio transmissions from a Clearwire base station to a small, wireless modem, which easily connects a user's computer to the Internet.[4] Clearwire has announced it is on target to offer its first pre-WiMAX laptop (PC) card during the second half of 2007, which will substantially enhance the portability and mobility of Clearwire's current wireless broadband service.[5] Moreover, Clearwire has committed to deploy wireless broadband networks based on the IEEE mobile Worldwide Interoperability of Microwave Access 802.16e-2005, or mobile WiMAX, standard once mobile WiMAX equipment is commercially available and meets Clearwire's requirements,[6] and recently announced the successful completion of the first phase of one of the country's first mobile WiMAX field trials, a significant milestone in the

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[3] In the *E911 NPRM*, the Commission states that "the two location technologies used by carriers—handset-based GPS and network-based triangulation —each have limitations. Network-based technologies are not as effective in rural areas often due to lack of sufficient towers, [and] [h]andset-based technologies are not as effective in urban areas, as signals often have difficulty penetrating buildings."

[4] Clearwire's wireless broadband network currently relies on network infrastructure equipment that is based on proprietary non-line-of-sight ("NLOS"), Orthogonal Frequency Division Multiplexing ("OFDM") technologies and Clearwire is deploying Motorola manufactured WiMAX-ready broadband access networks through Motorola's subsidiary, NextNet Wireless.

[5] *See Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable And Timely Fashion, and Possible Steps To Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, GN Docket No. 07-45, Comments of Clearwire Corporation (filed May 16, 2007) at 4.

[6] *See id.*

on-going efforts to commercially deploy true mobile broadband in the US.[7] Clearwire has developed and provides a facilities-based interconnected VoIP service over its wireless broadband networks and, as of June 30, 2007, offers its portable VoIP service in approximately 28 of its 43 US markets to date. Clearwire expects to continue rolling out its interconnected VoIP service in conjunction with its Internet access and other premium services in additional markets.

Since launching its VoIP service in April 2006, Clearwire has expended substantial capital and human resources in developing and employing a dynamic E911 capability that enables its VoIP customers' locations to be available to public safety answering points (PSAPs) that are capable of receiving such information as customers move their VoIP service throughout Clearwire's network. Clearwire's dynamic E911 capability, provided in conjunction with the trunking and database capabilities of a prominent third-party E911 service provider, avoids the up to 3-5 day lag inherent in updating the ALI database that can be common with static 911 solutions.[8] Through the dynamic E911 solution Clearwire has employed, registered location updates are made generally within 15 minutes or so of a customer notifying Clearwire of a change in location, and that customer's 911 call and "dynamic ALI" information are routed to the proper geographically appropriate PSAP to receive emergency calls from the new location. Clearwire's E911 solution, nevertheless, still must rely on its customer's compliance with their obligation to notify Clearwire when the registered location of their service changes, as no automatic location identification capability exists at this time.

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[7] *See* Letter from Terri B. Natoli, Vice President, Regulatory Affairs and Public Policy, Clearwire Corporation, to Marlene H. Dortch, Secretary, FCC, DA 07-1652, WT Docket No. 07-71, (filed May 22, 2007).

[8] *See E911 First Report and Order* at n.143.

Notwithstanding the substantial industry efforts that have been developed to enhance the "static" VoIP E911 obligations to provide a more robust, reliable E911 service for portable VoIP subscribers, many PSAPs are not capable of receiving VoIP dynamic ALI information.[9] In such cases, while a VoIP subscriber's emergency call will still be routed over the wireline E911 network through the Selective Router to the appropriate PSAP, the PSAP may not be capable of deciphering or processing the ESQK, and thus must still inquire as to the location and call back number of the VoIP service caller. Clearwire understands that the PSAPs having these limitations are similarly not Phase II CMRS capable either. Thus, even were the Commission to require an automatic location capability to exist within a portable VoIP provider's system, such a requirement would not improve or address the inability of these PSAPs to process such information upon receipt. Clearwire highlights this fact to ensure that the Commission is aware of and understands that efforts must be made to encourage PSAPs to embrace technological change and to upgrade their own systems to be able to receive location information from portable and mobile emergency VoIP service callers.

Thus, as noted above, while Clearwire agrees that portable VoIP service providers should eventually employ an automatic location technology that meets the same accuracy standards, to the extent possible, as are applicable to services provided by CMRS carriers,[10] portable VoIP providers are still in the process of developing and perfecting enhancements to the mandated static E911 solution to better meet their portable subscribers' emergency service needs. Premature imposition of additional portable VoIP E911 obligations may serve to undermine the progress that is being made. Clearwire therefore urges the Commission to hesitate before

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[9] Dynamic ALI and automatic number information (ANI) are provided to PSAPs in the form of Emergency Service Query Keys (ESQKs) that the PSAPs use to query the ALI database obtain the actual location of the caller and the number it is calling from.

[10] *See E911 NPRM* at para. 1.

endorsing or mandating adoption of any particular standard or technology at this time, providing all industry participants, including VoIP service providers, public safety representatives, and equipment vendors, sufficient time to assess current technologies and determine which technologies may best achieve the overall goal of enhanced industry emergency service capabilities and response for portable VoIP customers.

II. THE COMMISSION SHOULD CAREFULLY CONSIDER THE RECORD IN THIS PROCEEDING BEFORE TAKING ACTION AND ADOPT ADEQUATE TIMEFRAMES FOR IMPLEMENTATION AND COMPLIANCE

A. Clearwire Has Already Begun Investigating How to Provide Automatic Location Capabilities

Even before the instant Commission proposal to mandate an automatic location capability for portable VoIP in this proceeding, Clearwire has been evaluating such capabilities for its portable VoIP service, to find and implement the right solution for its evolving network technology. Indeed, Clearwire had anticipated having some such capability available sometime this calendar year.[11] In spite of these efforts, to Clearwire's knowledge, an acceptable and technically feasible solution is not nearly ready for commercial implementation. As a result, Clearwire requests that the Commission move cautiously towards a decision concerning how and when portable VoIP automatic location capabilities must be implemented. Providers of portable VoIP services require sufficient time to further develop, test and implement automatic location-based technologies before they would be able to comply with any such Commission mandate and associated accuracy rules.[12]

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[11] *See* Clearwire Corporation, United States Securities and Exchange Commission Form S-1, at 64 (Feb. 2007).

[12] The Commission states that "[it is] inclined to require that the uniform accuracy standard be . . . 50 meters for 67 percent of calls, [and/or] 150 meters for 95 percent of calls." *E911 NPRM* at para. 12.

Clearwire understands the Commission's public safety concerns in proposing this mandate, and agrees it is an objective that should be vigorously pursued. Indeed, as VoIP services become more attractive to consumers, supplanting traditional telephony, secure and reliable access to emergency services at precisely the location the emergency occurs is a laudable goal. But acknowledging the over eight years since Congress enacted the Wireless Communications and Public Safety Act,[13] and the time it has taken to get CMRS providers to the level of E911 service they have today, VoIP providers must be afforded additional and adequate time to develop workable solutions. Clearwire therefore urges the Commission to adopt a flexible framework for compliance that ultimately serves the needs of consumers, by allowing facilities-based wireless broadband providers that offer portable VoIP services sufficient time to develop ways to deploy mandatory automatic location accuracy capabilities that are suitable for their networks. Enabling the VoIP industry to achieve this lofty goal in a reasonable timeframe will better facilitate public safety entities' abilities to implement the complimentary capability to more expeditiously address emergency situations, and carry out their mandate to protect the safety of the citizens they serve.

B. Advances in Network and Handset-Based Technologies Should be Given Ample Consideration by the Commission

In the *E911 NPRM*, the Commission seeks comment on whether advances in handset and network-based location technologies should play a part in its analysis.[14] Clearwire supports a Commission approach that incorporates an assessment of advances in location-based technologies, and the VoIP industry's ability to test and implement these technologies. As stated above, offering service providers sufficient time for testing new technologies is critical for

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[13] Wireless Communications and Public Safety Act of 1999, Pub. L. No. 106-81, enacted Oct. 26, 1999, 113 Stat. 1286.

[14] *See E911 NPRM* at para. 1.

determining which solution best serves their networks, their consumers, and the capabilities of public safety entities to upgrade their systems consistent with any new requirements.

Clearwire has tentatively concluded that a hybrid solution, employing some type of both triangulation and GPS technologies will best serve the needs of portable VoIP subscribers over its type of network. Some combination of these two technologies appears necessary for determining the most accurate location information for all types of service areas, *i.*e., urban, suburban and rural areas. Allowing the industry to fully assess the combined capabilities of technologies available is the best way to ensure that all VoIP service providers will be in a position to achieve compliance with the proposed accuracy standards based on the type of network they deploy and the service areas they expect to serve. This flexibility will allow industry to implement the best solution to comply more expeditiously with the Commission's proposed accuracy standards.

C. After Thorough Consideration of the Record, the Commission Could Consider Adopting a Compliance Structure Similar to That Adopted in its CALEA Proceeding

In the recent *CALEA Proceeding*, the Commission adopted a compliance deadline for interconnected VoIP and facilities-based broadband providers to come into compliance with CALEA mandates.[15] While the Commission appropriately refrained from mandating a particular standard for compliance,[16] leaving interconnected VoIP and facilities-based broadband Internet

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[15] *See Communications Assistance for Law Enforcement Act and Broadband Access and Services*, First Report and Order and Further Notice of Proposed Rulemaking, ET Docket No. 04-295, 20 FCC Rcd 14989 (2006) ("*First Report and Order*"); Second Report and Order and Memorandum Opinion and Order, ET Docket No. 04-295, 21 FCC Rcd 5360 (2006) ("*Second Report and Order*") (collectively "*CALEA Proceeding*").

[16] The Commission stated that "[i]ndividual carriers are free to choose any technical solution that meets the assistance capability requirements of CALEA, whether based on an industry standard or not. Carriers, therefore, have some degree of flexibility in deciding how they will comply with the section 103 requirements." *See Communications Assistance for Law Enforcement Act and Broadband Access and Services*, Notice of Proposed Rulemaking and Declaratory Ruling, ET Docket No. 04-295, 19 FCC Rcd 15676 (2004) ("*CALEA NPRM*") at para. 12.

access service providers the valuable and necessary flexibility to choose a solution that best fit their networks, in order to monitor progress during the period preceding the mandated compliance date, the Commission adopted an interim status report requirement. In order to meet this requirement, interconnected VoIP and facilities-based broadband Internet access providers were required to report to the Commission as to how they were proceeding towards achieving compliance.[17] Once the Commission carefully and fully addresses the record compiled in this proceeding, should it find that establishing a firm deadline for compliance with automatic location capabilities for E911 is nevertheless necessary, Clearwire suggests that it adopt an approach similar to that adopted in its *CALEA Proceeding*, wherein it enables service providers to have the flexibility they require yet at the same time monitors progress in solution development to ensure compliance is achieved. At the same time, however, Clearwire urges the Commission to adopt such an approach *only* in conjunction with a lengthy compliance deadline that affords service providers ample time to identify and test reliable and feasible automatic location based solutions.

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[17] *See CALEA Second Report and Order*, 21 FCC Rcd 5360.

III. CONCLUSION

In view of the forgoing, Clearwire respectfully requests that the Commission allow it and other portable VoIP providers the flexibility and time required to implement the best solution for achieving an automatic location capability for E911 purposes and for meeting the Commission's proposed accuracy standards.

Respectfully submitted,

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